Testbed Ideas:
Operational Proving Ground

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Science and Technology Imperatives

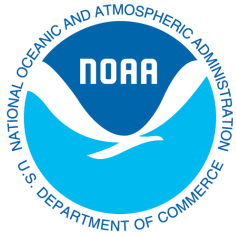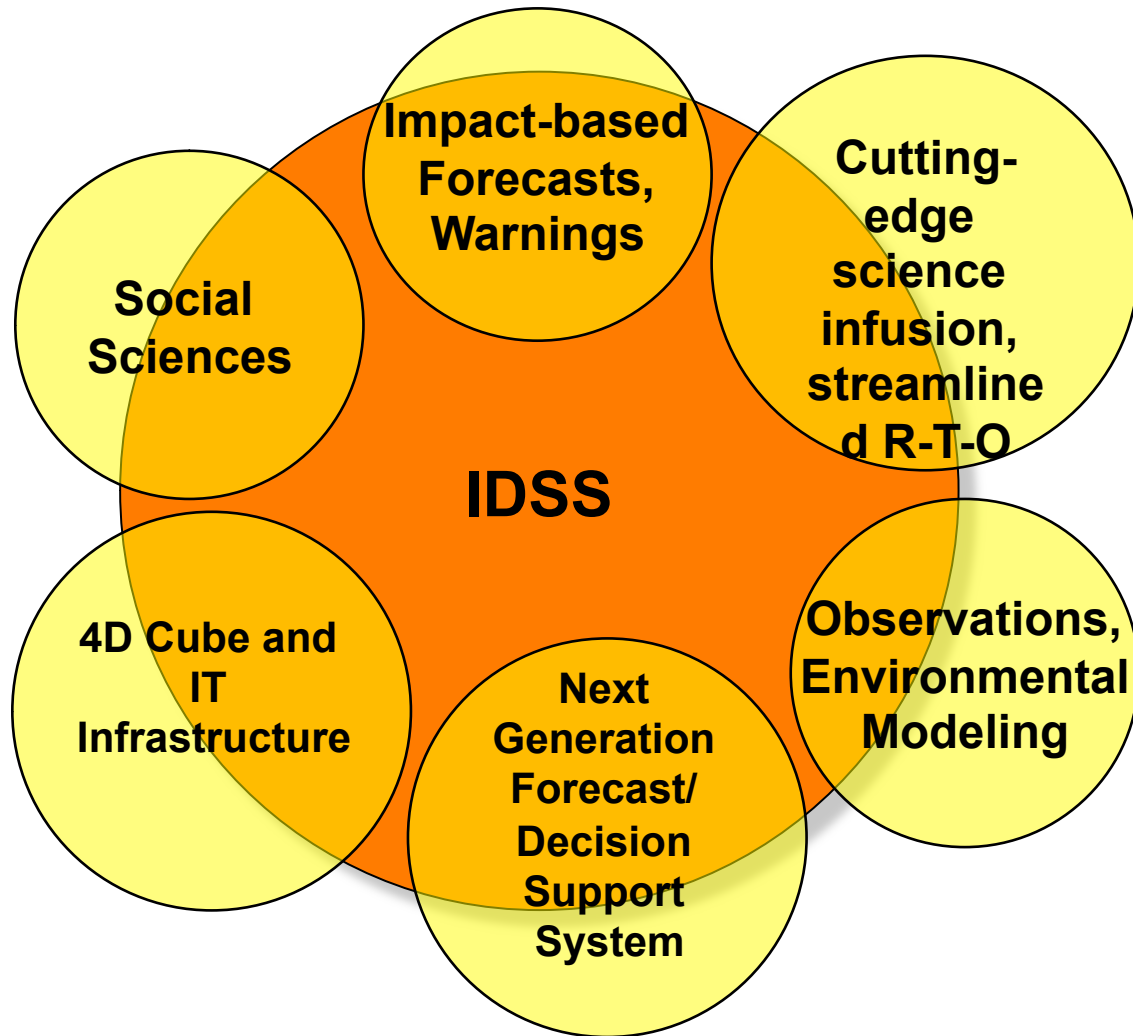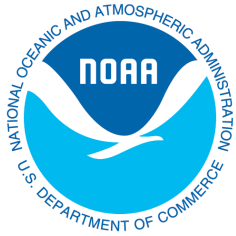| Drivers	Over the Horizon Challenges
Operational Environment is changing	• Keeping pace with decision-maker expectations for more precise, consistent and timely impact-based forecasts and warnings
Rapid advances in S&T	• Getting ahead of the power curve to provide forecasters the best observations, models, applications, tools and equipment
Huge data explosion on the horizon	• Will become too cost prohibitive to transmit everything, everywhere…how to prevent forecaster saturation
US industry reliance on "foundational" weather data is increasing	• Soaring expectations/demand on NWS systems as weather data becomes integral to industry's business decisions and productivity
Federal deficits and resource constraints	• Maintaining world class capabilities

Science & Technology:
Enabling Change

- Comprehensive, networked observations, situational awareness
- Neighborhood-scale, short-range through seasonal forecast guidance
- Forecast assistance tools -- free forecasters for most cerebral tasks
- Decision-assistance tools/ technology to enable DSS
- Smart Push/Pull IT and communications arch-- efficiency, interoperability
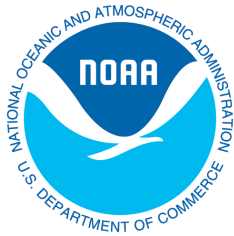- Social science in system design & communicating uncertainty

Diagram labels: Impact-based Forecasts, Warnings; Cutting-edge science infusion, streamlined R-T-O; Social Sciences; IDSS; Observations, Environmental Modeling; 4D Cube and IT Infrastructure; Next Generation Forecast/ Decision Support System

Improving Transition of Research to Operations (R20/O2R)

Framework

- More agile, rapid software development and infusion

- Skipping a generation of technology

- Innovation center partnerships

- Partnerships w/academia, private industry, government

- Strengthen O-to-R processes: partner participation in testbeds, proving grounds

  - Rapid prototyping
  - Developmental testbeds and operational proving ground

Moving Research into Operations
Framework for Improving R2O/O2R

Recent Accomplishments

HWT 2009 + DTC + EFP + SPC

- Identify and test innovative ways to develop new products/display techniques providing forecasters with probabilistic guidance on high impact convective weather events.
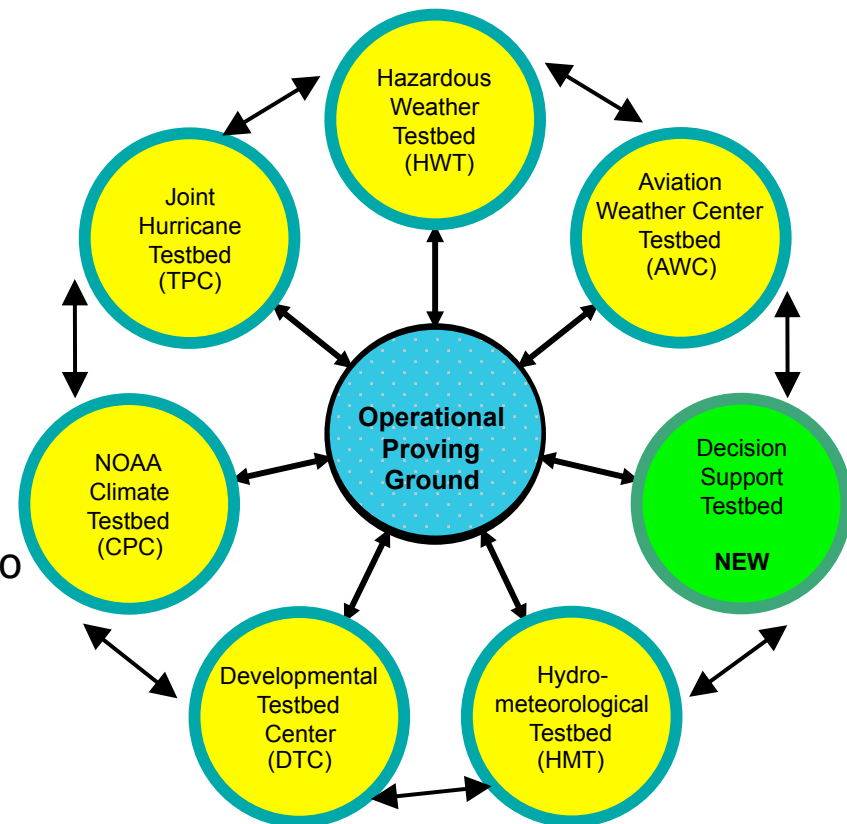
HWT 2009 + EWP + SSWIM + WFO

- Probabilistic Hazard Information.
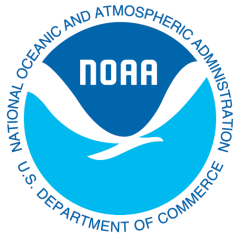- Four-Dimensional Storm Cell Investigator.

HMT 2010 + DTC + HPC

- Focus on atmospheric rivers. Explore tools to understand/predict extreme precip on West Coast.

DTC 09/10 + EMC

- HWRF tutorial/code out to community (1st operational hurricane mod to community).
- EMC to draw code from repository containing well tested contributions from the research community.

Moving Research into Operations
Framework for Improving R2O/O2R

- Testbed system of systems
  - **Loss Overarching governance**
  - Interoperability

- Accelerate agile, rapid software/tech insertion

- DSS Testbed

- Develop Operations Proving Ground
  - Experimental testing in ops setting
  - Virtual?
  - Brink and mortar?
  - Funding?
  - Convective Initiation Demo Project?

User Test beds